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A SMALL FASCICLE OF NOVELTIES

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(Plates 1157—1160)

In partially clearing the record before the issue of the 8th edition of Gray's Manual it is important to discuss some interesting plants of our flora which have been held over until they could receive proper study. The first two discussions are accompanied by four of Dr. Schubert's very clear plates. The cost of their reproduction has been generously met by Mr. Bayard Long.

I. A Study of Habenaria orbiculata (Plates 1157 and 1158)

Habenaria orbiculata (Pursh) Torr., var. **Lehorsii,** var. nov. (tab. 1157, fig. 1 et 2, × 1), planta parva foliis 6–9 cm. longis 4–5 cm. latis; scapo 7–11 cm. alto; racemo 2–5.5 cm. longo, 2–4 cm. crasso floribus confertis, internodiis imis 1–8 mm. longis; pedicellis 2–4 mm. longis crassis; labio 7–10 mm. longo; calcare 0.8–1.5 cm. longo.—St. Pierre et Miquelon: bare spots among Ericaceous shrubs on a denuded hill, Cap à l'Aigle, July 25, 1945, *Mathurin Le Hors* (type in Herb. Gray); same station, August 2, 1949, *Le Hors.*

Var. *Lehorsii* is the most extreme departure from typical *Habenaria orbiculata* (our t. 1158, figs. 1 and 2) of moist to dry woodlands from southern and western Newfoundland to Thunder Bay District, Ontario, and Minnesota, thence south to Nova Scotia and the Northern States and on the uplands to South Carolina and Tennessee. In its more northeastern and bleak habitats, the latter (typical) plants somewhat approach var. *Lehorsii;* and some of them, especially on or among the mountains of western Newfoundland (t. 1157, figs. 3 and4, × 1) go as well with that

as with true *H. orbiculata*. The type- and topotype-series of var. *Lehorsii* stand off on several characters from the continental (and rarely insular) plant as these are displayed in the 153 collections of the latter before me. These are summarized below and the details of the inflorescence are shown in T. 1158, FIGS. 1 and 2:

H. ORBICULATA (typical), T. 1158, FIGS. 1 and 2, ×1: Leaves 0.6–2 dm. long, 0.4–2 dm. broad: scape 1.5–5 dm. high, with (1–)2–5 bracts; raceme lax and open, 0.7–2.5 dm. long and 3.5–8 cm. in diameter, the flowers 0.8–2.5 cm. apart; pedicels filiform, 6–13 mm. long in maturity; spur 1.6–2.7 cm. long; lip 1–1.5 cm. long.

Var. LEHORSII: Leaves 6–9 cm. long, 4–5.5 cm. broad; scape 7–11 cm. high, with 0–2 (rarely 3) bracts; raceme dense, 2–5.5 cm. long, 2–4 cm. in diameter, the lower flowers 1–8 mm. apart; pedicels stout, 2–4 mm. long; spur 8–15 mm. long; lip 7–10 mm. long.

Habenaria orbiculata, var. *Lehorsii* of open heathy barrens is thus quite parallel with *H. Hookeri* Torr., var. *abbreviata* Fernald in RHODORA, XXXV. 239, t. 252 (1933), that dwarf and endemic Newfoundland variety of a continental woodland species known likewise on open heathy barrens, which are carpeted by *Juniperus communis*, var. *saxatilis* Pallas, *Empetrum nigrum* and *Dryas integrifolia* (l. c. 54). When *H. Hookeri*, var. *abbreviata* was described I pointed out (RHODORA, l. c. 8, 9, 87 and 88) the remarkable occurrence on open barrens or mountain-tablelands of a phase of *H. orbiculata* which greatly puzzled Long, Fogg and myself, saying: "other southern species on French Island [Bay of Islands] which seemed absolutely out of place in close proximity to [dominantly Arctic] *Silene acaulis* and *Saxifraga oppositifolia* (MAP 1) were *Cypripedium reginae* Walt . . . and *Habenaria orbiculata* (MAP 9) . . . *Habenaria orbiculata* was so abundant as to be almost dominant in dry peat and gravel within a stone's throw of the open shore. In New England and eastern Canada we had always thought of it as an orchid of the richest of old woodlands; but its choice of habitat on bleak French Island [fruiting raceme in T. 1157, FIG. 4, × 1] was only a breaking of the ice for our next station for it. In 1929 we found it [flowering raceme as T. 1157, FIG. 3, × 1] vying with the arctic *Scirpus cespitosus* var. *callosus* (MAP 10) for possession of a sphagnous pocket on the high tableland of Lookout Mountain at Bonne Bay". As to the station on Lookout Mountain, at an altitude approaching 500 m., whereas close to sea-level at the western base of the mountain the arctic *Oxyria digyna* abounds, the fol-

lowing record was made (pp. 87, 88): "As already stated, *Habenaria orbiculata* (MAP 9) was here growing in turf of the ubiquitous arctic-alpine *Scirpus cespitosus* var. *callosus* (MAP 10). We had difficulty in believing our own eyes and, at my request, Fogg made detailed drawings of its flowers, lest we might forget how the fresh flowers appeared, but we cannot make it anything but *H. orbiculata* of 'rich woods' on the continent".

In the light of the present study it has become evident that the plants of open barrens of western Newfoundland (FIGS. 3 and 4), although with longer and slightly less crowded racemes and larger leaves than in the LeHors material, have the short and thick pedicels of the latter and relatively short spur and lip. They are transitional in all characters.

In summarizing (l. c. 240) in 1933, I said: "I am unable to find any tangible character to separate this extreme series from the larger Alleghenian plant and particularly from the plants of western North America", the latter plant described as *Platanthera Menziesii* Lindl. Gen. Sp. Orchid. Pl. 286 (1935). This plant, however, seems sufficiently definite (our T. 1157, FIG. 5) as to stand as an isolated northwestern variety, rather closer to the Newfoundland plant than to the wide-ranging eastern continental *H. orbiculata*, var. *typica:*

HABENARIA ORBICULATA (Pursh) Torr., var. **Menziesii** (Lindl.), stat. nov. *Platanthera Menziesii* Lindl. Gen. Sp. Orchid. Pl. 286 (1835). *Lysias Menziesii* (Lindl.) Rydb. Fl. Rocky Mts. 178 (1917).

When var. *Menziesii* is separated from the more eastern *Habenaria orbiculata* and *H. macrophylla* Goldie in Edinb. Phil. Journ. vi. 331 (1822), with both of which it is often confused, it stands out, at least as shown in the 12 numbers in the Gray Herbarium, through its relatively small leaves (5–15 cm. long and 4–12 cm. broad; in typical *H. orbiculata* up to 2 dm. long and broad); scape 1–2 dm. high (in typical *H. orbiculata* 1.5–5 dm. high); stricter raceme, the longest scarcely 2 dm. long and with 12–20 remote flowers (longest racemes of eastern typical *H. orbiculata* up to 2.5 dm. long and with 25–50 flowers); pedicels stoutish (as opposed to filiform); spur at most 2.2 cm. long (in the East up to 2.7 cm.). Although the thickish pedicels usually found in var. *Menziesii* had earlier suggested to me those of var.

Lehorsii and transitions to it, the shorter pedicels, crowded flowers and shorter spur and lip clearly distingush the latter from the former.

Much confusion has arisen through the inclusion in *Habenaria orbiculata* or *Lysias orbiculata* (Pursh) Rydb., originally described by Pursh as *Orchis orbiculata* Pursh. Fl. Am. Sept. ii. 588 (1814) from "shady beech-woods: on the mountains of Pensylvania and Virginia", of the technically quite different *H. macrophylla* Goldie, described from Montreal. There can be no doubt as to the identity of *H. macrophylla*. Goldie compared it with *H. orbiculata*, its leaves said to be "four times as large as those of *H. orbiculata*, measuring from six to eight inches in length, very thin and pellucid . . . *Flowers* large, white, . . . and arranged in a lax spike of about five or six inches in length . . . *labellum* . . . linear, as long as the germen . . . *Germen* about an inch in length." A very illuminating review of early misidentifications of *H. macrophylla* and *H. orbiculata*, with beautiful drawings of the flowers of the two, was published by Ames in Rhodora, viii. 1–5 with figs. (1906). After his most careful discussion Ames gave the measurements of the spurs of *H. orbiculata* (ranging from 16 to 27, most often 18–20 mm. long) and of *H. macrophylla* (ranging from 32 to 43, most often 35–37 mm. long); while the type of "*Platanthera Menziesii* is the short-spurred form of *H. orbiculata*". With such a careful study at hand, it is unfortunate that *H. macrophylla* (our t. 1158, figs. 3 and 4, × 1) and *H. orbiculata* (our t. 1158, figs. 1 and 2, × 1) should still be confused. The inclusion of *H. macrophylla* by Abrams in his Ill. Fl. Pacific States, i. 477 (1940) in the synonymy of the carefully illustrated *Lysias orbiculata* (his fig. 1168) may account for his "Scape short, 3–6 dm. high". At least, the material of the northwestern plant illustrated by him (our *H. orbiculata*, var. *Menziesii*) in the Gray Herbarium shows scapes only 1–2 dm. high, while the scape of typical *H. orbiculata* rarely reaches a height of 5 dm.[1]

Although *Habenaria macrophylla* and typical *H. orbiculata* are both woodland plants, they rarely, if ever, grow together. In the Gray Herbarium and that of the New England Botanical Club there are 135 collections from eastern Canada (Quebec

[1] Through the dates of publication given by Abrams (1826 for Pursh's basic *Orchis rotundifolia*, 1822 for Goldie's *Habenaria macrophylla*) one would infer that the latter name has priority. By correcting the Pursh date to 1814 this difficulty is removed.

Photo. B. G. Schubert

HABENARIA ORBICULATA (var. TYPICA): FIG. 1, flowering inflorescence, × 1, from New Hampshire; FIG. 2, fruit, × 1, from New Hampshire.

H. MACROPHYLLA: FIG. 3, unusually small inflorescence, × 1, from Vermont; FIG. 4, fruit, × 1, from Maine.

eastward and southward) and northern New England of these two species. A listing of all localities shows only 7 cases in which both species have been collected in the same township or similar large area. This is well illustrated in Newfoundland, where variations of *H. orbiculata* occur on the western side of the Island and near the southern coast west of the Avalon Peninsula; but only *H. macrophylla* is known from the Avalon Peninsula. Furthermore, in general *H. macrophylla* occurs more often in richer soil than does *H. orbiculata:* such statements of habitat as "woods" or "damp" or "dry woods" are not distinctive but many labels of *H. macrophylla* indicate "deep rich woods", "hardwoods", "rich deciduous woods", "old mixed woods", "old maple-grove", etc., specifications rarely found on labels of *H. orbiculata.* As supplemental to the characters usually recognized as distinguishing *H. macrophylla*, I find that its full-grown capsules (our FIG. 4) range from 1.8–2.5 cm. long, with a thickness of 6–8 mm.; those of *H. orbiculata* (FIG. 2) 1.3–2 cm. long and 4–6 mm. thick.

EXPLANATION OF PLATES

PLATE 1157, all figs. × 1. FIGS. 1 and 2, racemes of HABENARIA ORBICULATA (Pursh) Torr., var. LEHORSII Fernald: FIG. 1 from TYPE; FIG. 2 from TOPOTYPE. FIGS. 3 and 4, H. ORBICULATA passing into var. LEHORSII: FIG. 3 from turf of *Scirpus caespitosus* L., var. *callosus* Bigel. and in *Sphagnum*, wet peaty bog-barrens at 400–550 m. alt., tableland of Lookout Mountain, Bonne Bay, Newfoundland, *Fernald, Long & Fogg*, no. 1554; FIG. 4, fruit, sphagnous boggy marsh, French (or Tweed) Island, Bay of Islands, Newfoundland, *Fernald, Long & Fogg*, no. 196. FIG. 5, raceme of H. ORBICULATA, var. MENZIESII (Lindl.) Fernald from Big Fork, Flathead Lake and vicinity, Montana, July 15, 1908, *Mrs. Joseph Clemens.*

PLATE 1158, all figs. × 1. FIGS. 1 and 2, portions of racemes of HABENARIA ORBICULATA, var. TYPICA: FIG. 1, flowers from Whitefield, New Hampshire, July 28, 1895, *Walter Deane;* FIG. 2, fruits from Franconia, New Hampshire, September 24, 1895, *E. & C. E. Faxon.* FIGS. 3 and 4, H. MACROPHYLLA Goldie: FIG. 3, unusually small raceme from Willoughby, Vermont, July 14, 1898, *G. G. Kennedy;* FIG. 4, fruits, Douglas Hill, Sebago, Maine, *Fernald, Long & Norton*, no. 13,318.

II. A SOUTHEASTERN NUPHAR (Plates 1159 and 1160)

NUPHAR **puteorum,** n. sp.[1] TAB. 1159 et TAB. 1160, FIG. 1–6. Similar to *N. ovatum* (Miller & Standley) Standley, but leaf-blades usually more tapering to apex, sparsely and minutely silky-puberulent beneath, the sinus 2–4 cm. broad near the middle, petiole subterete, densely puberulent; fruit 2.5–3.8 cm.

[1] NUPHAR **puteorum,** sp. nov., a *N. ovato* differt foliis ad apicem plus ovato-attenuatis, sinu latiore (medio 2–4 cm. lato); fructibus 2.3–3.5 cm. diametro; disco 1.3–1.5 cm. diametro, margine valde undulato, centro plerumque papillifero; seminibus quadrato-obovatis 4–5 mm. longis dorso puberulis.

high, 2.3–3.5 cm. thick, obscurely ribbed; rim of disk undulate, 1.3–1.5 cm. in diameter; disk deeply depressed, the center usually papillate; rays extending nearly to margin of disk; seeds quadrate-obovate, 4–5 mm. high, puberulent, at least on the back.—Sussex County, Virginia: deep muddy pit at margin of Chappell's Mill-pond (Honey Pond), west of Lumberton, July 3, 1942, *Fernald & Long*, no. 14,326 (type in Herb. Gray.; isotype in Herb. Phil. Acad.).

Nuphar puteorum occupied the center of a deep pit dug at the margin of Chappell's (or Honey) Pond. The very slippery and muddy border of the pit was so treacherous that we were able, with the aid of forked branches of trees, to pull ashore only a few broken-off flowering and fruiting stalks and some characteristic leaves. So treacherous was the footing and so indefinite the possible depth of the pit that we planned to return with a strong rope, as a safeguard, and secure better material, a responsibility now left to others. Hence the specific name, from *puteus*, a pit (not from *puteo*, to stink, although, after our half-drowning and unsavory experience from marsh-fumes in getting it, we inclined toward the latter source of the specific name).

Nuphar puteorum apparently belongs in the extreme southern and southwestern series of species with the lower leaf-surface more or less puberulent; and, judging from the monograph by Gerrit S. Miller & Paul C. Standley, *North American Species of Nymphaea*, Contrib. U. S. Nat. Herb. xvi^3. (1912), it is nearest allied to the Texan *Nuphar ovatum* (Mill. & Standl.) Standl. From that monograph some details (our t. 1160, figs. 7 and 8) are here reproduced. The leaf-blade of *N. puteorum* is more ovate than that of *N. ovatum* and its sinus broader, 2–4 cm. across at the middle, the narrow sinus of *N. ovatum* shown as only one-tenth that breadth. The fruit (fig. 7) of the latter species is 3–4 cm. in diameter and with an entire summit-rim 2.8–4 cm. across; whereas the fruit (t. 1159, fig. 2) of the Virginian plant is 2.2–3.5 cm. in diameter and with the strongly scalloped or undulate rim only 1.3–1.5 cm. across. The depressed stigmatic disk (t. 1160, fig. 8) of the Texan plant is entire, 2.2–3 cm. across and with a smooth center, its rays failing by 2–4 mm. to reach the margin; the strongly undulate-margined disk (figs. 3 and 4, × 3) of *N. puteorum* is at most 1.5 cm. in diameter and its center often bears 1 to several papillae which resemble short stigmatic rays; and the rays extend

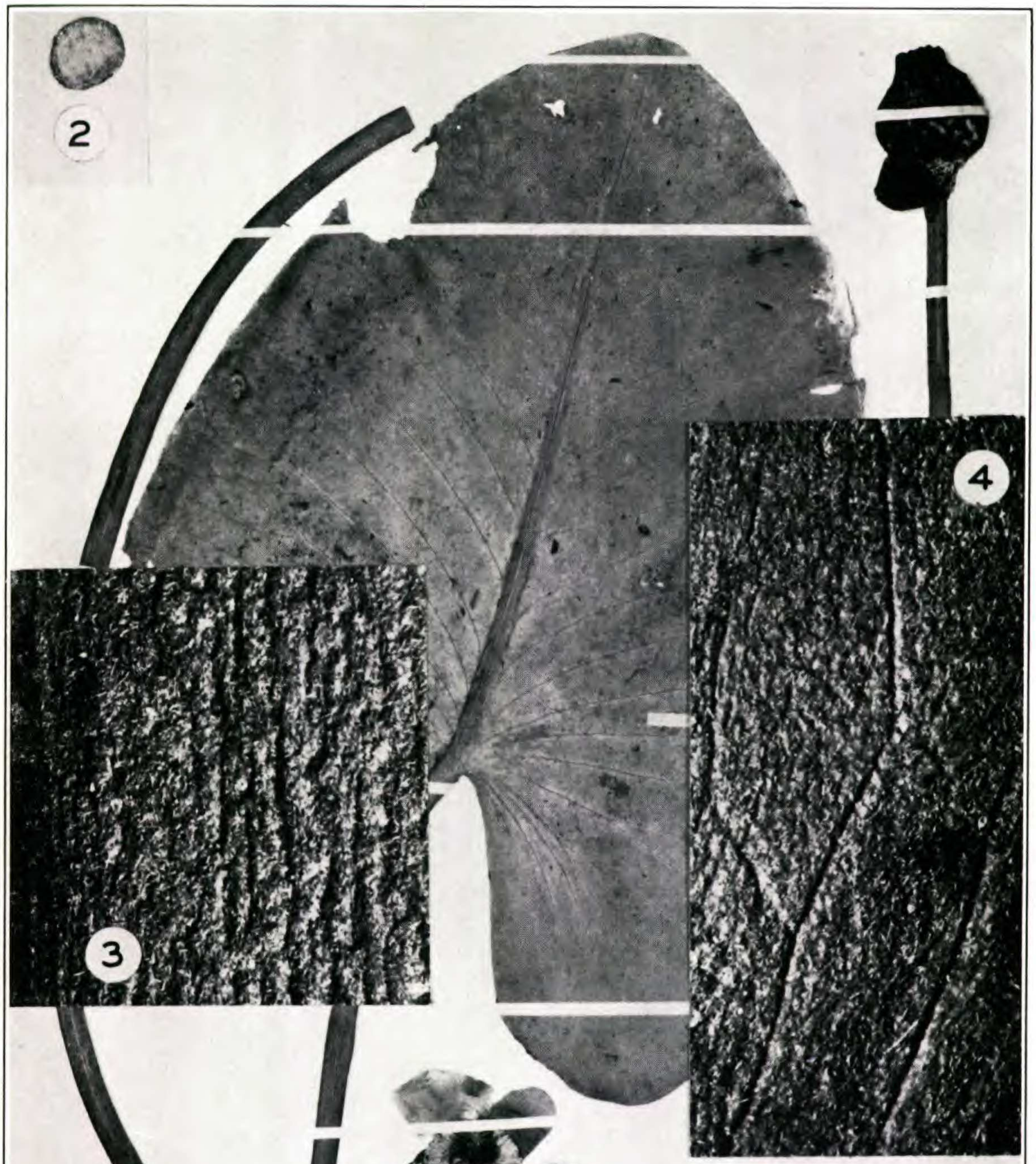

Photo. B. G. Schubert

NUPHAR PUTEORUM (all figs. from TYPE): FIG. 1, leaf, flower and fruit, × ca. ⅓; FIG. 2, cross-section of petiole, × 1; FIG. 3, surface of petiole, to show pubescence, × 5; FIG. 4, lower surface of leaf, with minute pubescence, × 5.

nearly to the margin of the disk. The seeds (FIG. 9) of *N. ovatum* are 3.5–4 mm. long, 3 mm. in diamerer, ovoid to obovoid and lustrously glabrous; those of the Virginian plant (FIG. 5) strongly quadrate-obovate, 4–5 mm. high and puberulent and dull at least on the back (FIG. 6, ×5), a character which is apparently unique in the genus.

The only other species with which *Nuphar puteorum* might be confused is *N. variegatum* Engelm., the wide-ranging northern species also with floating leaves. But, although the petioles and peduncles may be puberulent, they are conspicuously flattened and the lower leaf-surface is glabrous. Its capsules are corrugated above and with nearly entire summit-rim, and its seeds are relatively slender and lustrous. The newly defined species is a quite different plant and is to be expected farther south, especially near the inner margin of the Coastal Plain.

EXPLANATION OF PLATES 1159 and 1160

PLATE 1159. NUPHAR PUTEORUM, all figs from the TYPE: FIG. 1, leaf, flower and fruit, × ca. ⅓; FIG. 2, cross-section of petiole, × 1; FIG. 3, surface of petiole, to show pubescence, × 5; FIG. 4, lower surface of leaf, with minute pubescence, × 5.

PLATE 1160. FIGS. 1–6, from TYPE of NUPHAR PUTEORUM: FIG. 1, flower laid open, × 1; FIG. 2, capsule, × 1; FIGS. 3 and 4, disks, to show rays, center and undulate margin, × 3; FIG. 5, opaque seeds, × 1; FIG. 6, seeds, showing felted surface, × 5. FIGS. 7–9, N. OVATUM (Mill. & Standl.) Standl.: FIG. 7, larger of the fruits shown by Miller & Standley, × 1; FIG. 8, diagram of disk and rays, × 1, after Miller & Standley; FIG. 9, lustrous and glabrous seeds, × 1, from Driscoll Lake, Camp Fannin, 8 miles northeast of Tyler, Smith County, Texas, *H. E. Moore*, no. 993, as *N. advena* (Ait.) Ait. f.

III. A SOUTHERN AMELANCHIER

AMELANCHIER CANADENSIS (L.) Medic., var. **subintegra,** var. nov., frutex fastigiatus ad 3 vel 4 m. altus; foliis oblongo-ellipticis deinde subcoriaceis integris vel subintegris.—Damp sandy pine-barrens, southeastern VIRGINIA: south of Zuni, Isle of Wight County, July 4, 1942, *Fernald & Long*, no. 14,338; south of Lee's Mill, Isle of Wight Co., October 16, 1941, *Fernald & Long*, no. 13,949, and April 21, 1942 (in anthesis), *Fernald, Long & Abbe*, no. 14,177; east of Cox Landing, south of South Quay, Nansemond County, July 26 and 28, 1939, *Fernald & Long*, no. 10,670; northeast and east of Cox Landing, June 8, 1940, *Fernald & Long*, no. 12,095 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.).

Throughout the pine-barrens of Isle of Wight and Nansemond Counties var. *subintegra* is a characteristic tall fastigiate shrub of the wet depressions and damp thickets. In flower and foliage it is like typical and wide-ranging *Amelanchier canadensis* (rang-

ing from Georgia to southeastern and central Maine, central New Hampshire, southwestern Quebec and central-western New York. Typical *A. canadensis*, however, has the margins of the leaves regularly serrate nearly to base, with 6–11 sharp teeth, with acute sinuses, per cm. of margin. Var. *subintegra* at once attracts notice because of the quite entire or only apically slightly toothed leaves. It is consistent in the depressions of the pine-barrens throughout its area and doubtless crosses into eastern North Carolina. In all flowering material seen the young fruits are blasted; consequently no mature fruit has yet been found.

IV. The Autumnal Perennial Gentian of the Desert

In his scholarly Plants of Southern New Jersey, the late Dr. Witmer Stone wrote of the very distinct Pine-barren Gentian, the plant which has long passed as *Gentiana porphyrio* J. F. Gmelin, Syst. ii. 462 (1791):

It is probably a matter of individual preference to determine which gentian is the handsomest. The present species, found only in the remote sections of the Pine Barrens, is certainly the least known and to my mind as handsome as any. Its flaring mouth, the delicate markings within, and the intensity of the blue, make it one of the choicest blooms of the region.

It was apparently first discovered by William Bartram, who sent a drawing of it to Edwards, the British naturalist, who published it in his Gleanings of Natural History, vol. V., p. 98, 1758, as the "Autumnal Perennial Gentian of the Desert," but it was not properly named until 1791, and then from the Pine Barrens of South Carolina.—Stone, l. c. 640, 641 (1912).

The plate of William Bartram's plant and his brief description of it are unequivocal. The plate, in color, contained, in the style of Mark Catesby, a bird and a plant, these called on p. 97, under Edwards's Chapter xlv, Plate 255, "*The* Yellow-rumped Fly-catcher and *The* Gentian of the Desert", although beneath the plate itself Edwards's inscription reads "*The Autumnal Gentian of the Desert*". As stated by Stone, Edwards had the plant from William Bartram and he showed it primarily as an attractive perch for the fly-catcher, saying (p. 98):

> I received this bird, preserved dry, from Mr. William Bartram, of Pensylvania, with a drawing of the Gentian only, which I have added to it rather as a decoration, than a part of this Natural History; but nevertheless I shall give Mr. Bartram's account of it. He calls it the Autumnal Perennial Gentian of the Desert, and says, that it produces three or four stalks from one root, each of about a foot high, and some stalks produce two flowers: the flowers are of a fine blue colour: the

stalks and leaves green: the flowers keep long in their beauty, and the roots live many years: they are scarce in Pensylvania. Catesby, in his History of Carolina, vol. I. pag. 70, has given a different species of the American Gentian.

Bartram's description is quite as satisfactory as are many of Catesby or other pre-Linnaean and early post-Linnaean or even Linnaean ones, but until very recently it was not realized that Linnaeus in 1776 gave a name to the plant of Bartram, this antedating by 15 years the name given by Gmelin. The matter is clearly stated by Dr. W. L. McAtee who, in March, 1949, privately issued a 1-page announcement under the title, A LINNAEAN PAPER NEEDING FURTHER ATTENTION. His first paragraph reads:

> Near the end of his career, at the request of a London publisher (Jacob Robson), Linnaeus prepared (or perhaps merely added Latin names to a base provided him) "A Catalogue of the Birds, Beasts, Fishes, Insects, Plants & contained in Edwards's Natural History, in Seven Volumes, with their Latin Names." This was printed by Robson in London, 1776, as a 15-page, crown-folio pamphlet in conjunction with "Some Memoirs of the Life and Works of George Edwards" (38 pp.), apparently of his own composition. Probably this "Catalogue" was also separately distributed and from a closing, "N.B.", it is evident that it was prepared as a supplement to Edwards's work, instructions being given as to placing its parts for binding.

The only other *Gentiana autumnalis* is an illegitimate one, although that fact is not brought out in *Index Kewensis*, and the Linnaean name has priority of nearly a century. I refer to *Gentiana autumnalis* Preyer & Zirkel ex Babington in Journ. Linn. Soc. xi. 318 (1871). The latter name was quite illegitimate, since, under the maintained *G. amarella* L., Babington simply remarked: "This is probably the G. autumnalis of P. & Z."

The essential bibliography is as follows:

GENTIANA AUTUMNALIS L. Cat. Edwards's Nat. Hist. 11 (1776), the name based on the plate and William Bartram's quoted description in Edwards, Gleanings Nat. Hist. v. 97, 98, t. 255 (1758). *G. angustifolia* Michx. Fl. Bor.-Am. i. 177 (1803), not Vill. (1787). *G. porphyrio* sensu authors, apparently not the restricted (as described) *G. porphyrio* of J. F. Gmel. (see below). *G. Stoneana* Fern. in RHODORA, xli. 555, t. 579 (1939). *G. porphyrio*, forma *Stoneana* (Fern.) Fern. in RHODORA, xliv. 152 (1942).

Forma **albocaerulea** (Fern.), comb. nov. *G. porphyrio*, forma *albocaerulea* Fern. in RHODORA, xliv. 152 (1942).